Notice of Allowability	Application No.	Applicant(s)	
	09/703,037	KHATIBZADEH ET AL.	
	Examiner	Art Unit	
	Jean B Corrielus	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *4/22/04*.

2. ☒ The allowed claim(s) is/are *1,4,6-21,24 and 26-38; renumbered as 1-32, respectively*.

3. ☒ The drawings filed on *25 June 2001* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 4/22/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Jean B Corrielus
Primary Examiner
Art Unit: 2637

3/5/05

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mitchell S. Bigel on 2/28/05.

The application has been amended as follows:

IN THE SPECIFICATION:

Page 4, lines 3-13 have been replaced by the following:

--Other modulation systems and methods according to embodiments of the invention include a quadrature modulator that modulates in-phase and quadrature-phase signals to produce a modulated signal. A phase tracking subsystem is responsive to the quadrature modulator to produce a phase signal that is responsive to phase changes in the modulated signal and that is independent of amplitude changes in the modulated signal. An amplitude tracking subsystem is responsive to the modulator to produce an amplitude signal that is responsive to amplitude changes in the modulated signal and that is independent of the phase changes in the modulated signal. An amplifier has a signal input, an amplitude control input and an output. The signal input is responsive to the phase signal and the amplitude control input is responsive to the amplitude signal. --

Page 6, lines 12-27 have been replaced by the following:

--Referring now to Figure 4, modulation systems and methods according to embodiments of the present invention are shown. As shown in Figure 4, these embodiments of modulation systems and methods 400 include a quadrature (IQ) 15 modulator 420 that modulates in-phase and quadrature-phase signals, referred to as I-data and Q-data, that may be generated by a user interface 410 in response to user commands, to produce a modulated signal 422. A phase tracking subsystem 430 is responsive to the quadrature modulator 420 to produce a phase signal 432 that is responsive to phase changes in the modulated signal 422 and that is independent of amplitude changes in the modulated signal 422. An amplitude tracking subsystem 440 also is included that is responsive to the modulator 420 to produce an amplitude signal 442 that is responsive to amplitude changes in the modulated signal and that is independent of phase changes in the modulated signal 422. An amplifier 450 includes a signal input, an amplitude or gain control input and an output. The signal input is responsive to the phase signal 432. The amplitude control input is responsive to the amplitude signal 442 and the output is applied to a transmit antenna 470, optionally via a power amplifier 460. Alternatively, the amplifier 450 may be a power amplifier. --

Page 10 lines 18-32 have been replaced by the following:

--Referring now to Figure 10, a block diagram of other embodiments of modulation systems and methods according to the present invention is shown. As shown in Figure 10, these modulation systems and methods 1000 include a Digital

Signal Processor (DSP) 920 that generates in-phase (I), quadrature-phase (Q) and amplitude (A) signals 922, 924 and 926, respectively, from a baseband signal 912 that may be generated by a user interface 910. A modulator such as an IQ modulator 930 modulates the in-phase and quadrature-phase signals 922 and 924, respectively, to 25 produce a modulated signal 932. A phase locked loop 940 is responsive to the modulated signal. The phase locked loop 940 includes a controlled oscillator 942 having a controlled oscillator output 944. An amplifier 950 includes a signal input, an amplitude or gain control input and an output. The signal input is responsive to the controlled oscillator output 944 and the amplitude control input is responsive to the amplitude signal 926. An optional power amplifier 960 is responsive to the output of the amplifier 950. A transmit antenna is responsive to the power amplifier 960 and/or amplifier 950. --

IN THE CLAIMS:

--1. (Currently Amended) A modulation system comprising:

a digital signal processor that generates in-phase, quadrature-phase and amplitude signals from a baseband signal;

a modulator that modulates the in-phase and quadrature-phase signals to produce a modulated signal;

a phase locked loop that is responsive to the modulated signal, the phase locked loop including a controlled oscillator having a controlled oscillator output; and

an amplifier having a signal input, an amplitude control input and an output, wherein the signal input is responsive to the controlled oscillator output and the amplitude control input is responsive to the amplitude signal;

wherein the in-phase and quadrature-phase signals are normalized in-phase and quadrature-phase signals such that the modulated signal is a constant amplitude modulated signal;

wherein the digital signal processor generates the normalized in-phase signal as one of a cosine and a sine of an angle theta and generates the normalized quadrature-phase signal as the other of a cosine and a sine of the angle theta, where theta is an angle whose tangent is the quadrature-phase signal divided by the in-phase signal.--

Claim 3 has been canceled.

Claim 4, line 1, "3" has been changed to --1--.

Claim 5 has been canceled.

--7. (Currently amended) A system according to Claim 1 further comprising:

a power amplifier that is responsive to the output of the amplifier[having a signal input, an amplitude control input and an output]; and

a transmit antenna that is responsive to the power amplifier.--

--18. (Currently amended) A system according to Claim 11 further comprising:

a power amplifier that is responsive to the output of the amplifier [having a signal input, an amplitude control input and an output]; and

a transmit antenna that is responsive to the power amplifier.--

--21. (Currently Amended) A modulation method comprising:

generating normalized in-phase, normalized quadrature-phase and normalized amplitude signals from a baseband signal;

modulating the normalized in-phase and quadrature-phase signals to produce a constant amplitude modulated signal;

phase locking the constant amplitude modulated signal to produce a phase locked signal; and

amplifying the phase locked signal at a gain that is varied in response to the normalized amplitude signal;

wherein the generating a normalized in-phase signal, a normalized quadrature-phase signal and a normalized amplitude signal from a baseband signal comprises:

generating an in-phase signal and a quadrature-phase signal from [a] said baseband signal;

generating an angle theta whose tangent is the quadrature-phase signal divided by the in-phase signal;

generating the normalized in-phase signal as one of a sine and a cosine of the angle theta; and

generating the normalized quadrature signal as the other of a sine and a cosine of the angle theta.--

Claim 23 has been canceled.

Claim 21, line 1, "23" has been changed to --21--.

Claim 25 has been canceled.

--29. (Currently amended) A method according to Claim 2 1 wherein a limiting step is not performed between the modulating the in-phase and quadrature-phase signals to produce [a] the constant amplitude modulated signal and the phase locking the constant amplitude modulated signal.--

--36. (Currently amended) A method according to Claim 31 further comprising limiting the modulated signal, and wherein the applying the modulated signal to a phase locked loop comprises applying the limited modulated signal to [a] the phase locked loop [that includes a controlled oscillator having a controlled oscillator output that produces the phase signal].--

Reasons for Allowance

2. The following is an examiner's statement of reasons for allowance: a modulation system and method are disclosed. The closest prior art Perret, US patent No. 6.018,275, Wilson et al US patent No. 6,631,254 and Hannu EP 0998088A2, disclose

similar system and method. However, Perret, Wilson and Hannu either taken singularly or in combination, does not teach or fairly suggest, in combination with the other claimed limitations, the limitations, recited in claim 11, lines 4-12, and claim 30, lines 3-9.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Maxi-Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-3086. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jean B Corrielus
PRIMARY EXAMINER
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